Green Button GSA Pilot Project

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Federal Government Interest in Data

Open Data Initiatives

- Making government information resources more publicly accessible in “computer-readable” form; encouraging its use by entrepreneurs fueling the creation of new products, services, and jobs
- Project Open Data: http://project-open-data.github.io
- Examples: Federal Register 2.0, Data.gov, Health Data Initiative, …

My Data Initiatives

- Empowering consumers with secure access to their own personal health, energy, and education data
- Blue Button (health info), Green Button (energy), Education, …

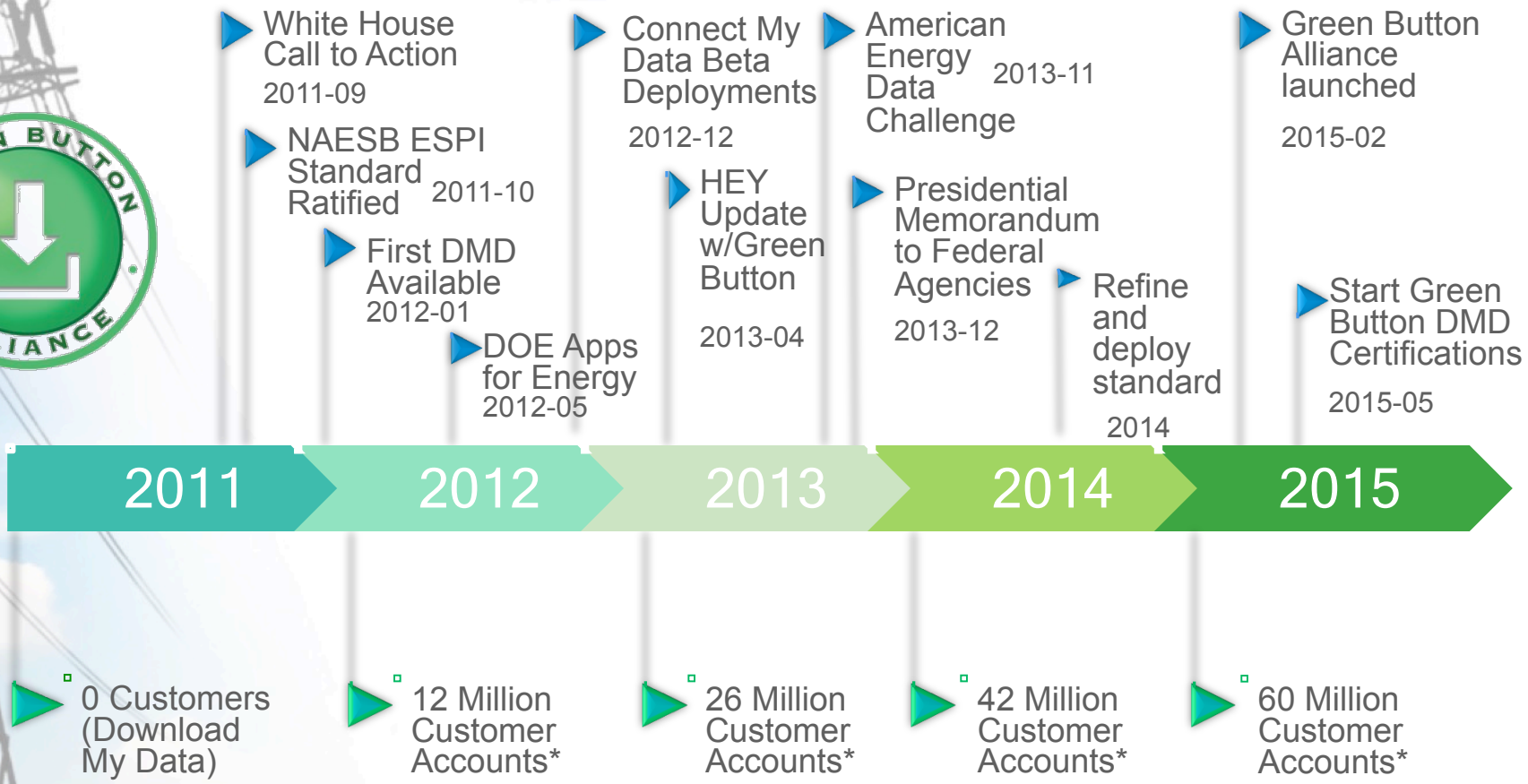
What is Green Button?

How is it useful to Federal Agencies?

- The Green Button Initiative encourages all utilities and service providers to standardize the format and communication of energy data so customers and third-party service providers can easily access and exchange energy usage information from utility or electricity suppliers.

- Agencies can benefit from having Green Button Data available, in a cost effective common format, from all their energy suppliers and using that data to more cost-effectively manage their energy use information.

Timeline of Activities



* Represents Customer Accounts with Access to Green Button Data – Primarily DMD; Actual Customer download numbers are not available

Green Button Standards

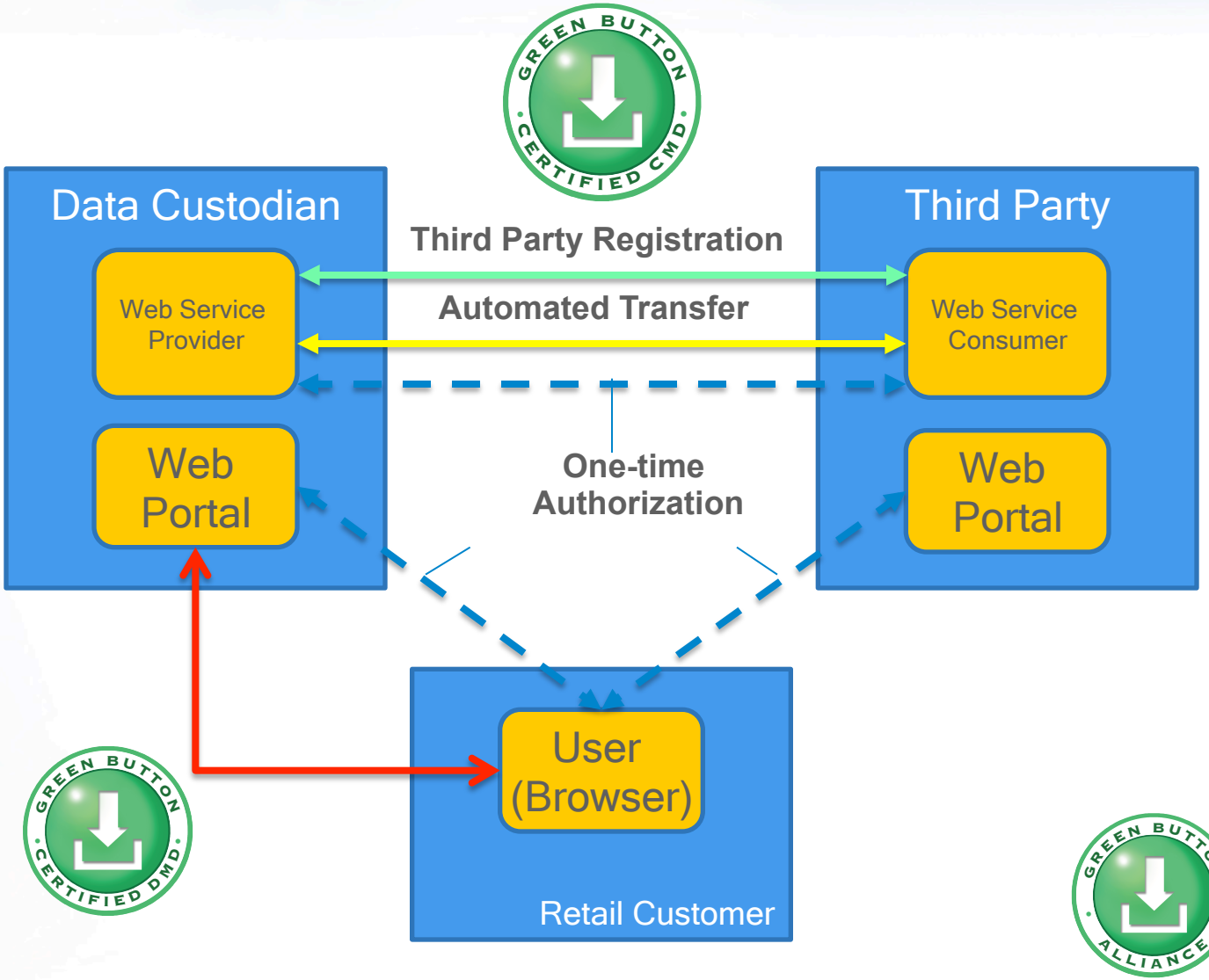
Download My Data

A customer download their Green Button Data.

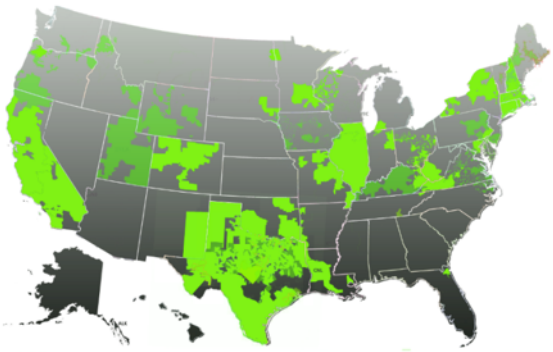
Connect My Data

A consumer can authorize a third-party service provider to receive direct access to their Green Button Data.

Green Button Data Exchange



Green Button Initiatives



Map of US Green Button Commitments

- Supports ecosystem development.
- Available to 60 million U.S. and 2.6 million Canadian customers.
- Broad industry collaboration and support.
- Facilitates testing, certification, collaboration and industry adoption.

Green Button Alliance

U.S. DEPARTMENT OF ENERGY

NIST National Institute of Standards and Technology

London Hydro

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

PG&E

SDGE connected

Sempra Energy utility

Schneider Electric

UCA International Users Group

- 501 (c)(3) non-profit
- Formed in February 2015
- Member organization
- UCAIug subsidiary
- Central authority for all things Green Button
  - Testing & certification
  - Marketing
  - Education
  - . . .

Application Areas

- **Insight**: web portals to analyze energy usage and provide actionable tips;
- **Heating and Cooling**: customized heating and cooling activities for savings and leveling of use;
- **Retrofits**: improved decision-support tools to facilitate energy-efficiency retrofits;
- **Verification**: measurement of energy-efficiency investments;
- **Real Estate**: provide energy costs for tenants and/or new home purchasers; and
- **Renewables**: optimize the size and cost-effectiveness of rooftop solar panels.

Green Button Project In Washington DC With GSA

http://www.buildsmartdc.com

- Provide 15 Minute Interval Data for 400 Buildings in DC
- Local Utility (Pepco Holdings) providing first in the nation deployment with Green Button Connect My Data inside!

Climate Action Plan Commitment

"The Administration will leverage the 'Green Button' standard – which aggregates energy data in a secure, easy to use format – within federal facilities to increase their ability to manage energy consumption, reduce greenhouse gas emissions, and meet sustainability goals."

The President's Climate Action Plan,
June 25, 2013

US Federal Government Commitment

"Sec. 3. Building Performance and Energy Management .. each agency shall: … incorporate Green Button into reporting, data analytics and automation, and processes, in consultation with local utilities …" [.. GSA, EPA pilots …]

Presidential Memorandum on Federal Leadership in Energy Management, Dec 5, 2013

- **Buildings use 40% of our Energy Resources; 75% of our Electricity**
- **Achieving Efficiency is a National Priority**
- **Green Button provides the missing feedback loop**
- **And helps to engage the consumer in the solution**

Federal Leadership in Energy Management

Sec. 3. Building Performance and Energy Management.

A. To encourage continuous improvement and better manage building performance, enhance energy efficiency, and reduce energy waste in an open and transparent way, each agency shall:

- install building energy meters and sub-meters
- install water meters at agency buildings
- … agency buildings …. associated monthly performance data is entered into the EPA Energy Star Portfolio Manager.
- publicly disclose … web-based tracking system annual energy performance data
- … incorporate Green Button into reporting, data analytics and automation, and processes, in consultation with local utilities

Presidential Memorandum for Heads of Exec. Departments and Agencies - Dec. 2013

GSA Pilot Overview

- Leverage existing Energy Management Pilot to include agency owned energy management systems via Green Button Connect My Data.
- Coordinate with local utility Green Button Connect My Data deployments to receive data obtained from utility owned meters.
- Authorize third party to receive Green Button Connect My Data streams from utility and agency owned systems for 5 target buildings in GSA Region 11.
- Coordinate with EPA on Green Button integration into Portfolio Manager.
- Provide input to FEMP to aid in the preparation of guidance to be provided to the agencies.

GSA Pilot

Encourage vendors to support Green Button standard when providing energy-related services to GSA

Details:

- Request Schneider-Energy EEM product team to provide Green Button Connect My Data to transmit sub-metering interval data to Energy Services Vendor (First Fuel)
- Request First Fuel to Provide Green Button data in monthly format to EPA Portfolio Manager using Green Button Connect My Data

Desired Outcome:

- Prove benefits of interoperable access to Green Button data for GSA Energy Efficiency Processes
- Increase ability of businesses and other agencies to participate in energy efficiency programs using Green Button

Engage Utilities (Pepco Holdings)

Ask utilities to provide GSA electricity data in Green Button format

- **Details:**
  - GSA usage utilities that serve its buildings
  - GSA asks utilities to use “Connect My Data” standard to link data directly to energy management/efficiency systems and vendors (First Energy)

- **Desired Outcome:**
  - Prove Utility Interval Data Supports GSA Efficiency Programs
  - Integrate Utility Data with (Interoperable) Green Button Data from Building Sub-Meter systems

Future Goal: Publish GSA's Utility Data

Publish GSA facilities utility data (ideally in the Green Button format)

Details:

- Send Green Button data to EPA/Portfolio Manager using Green Button Connect My Data
- DOE's Building Performance Database is seeking data (data.gov) to support public consumption of energy efficiency information

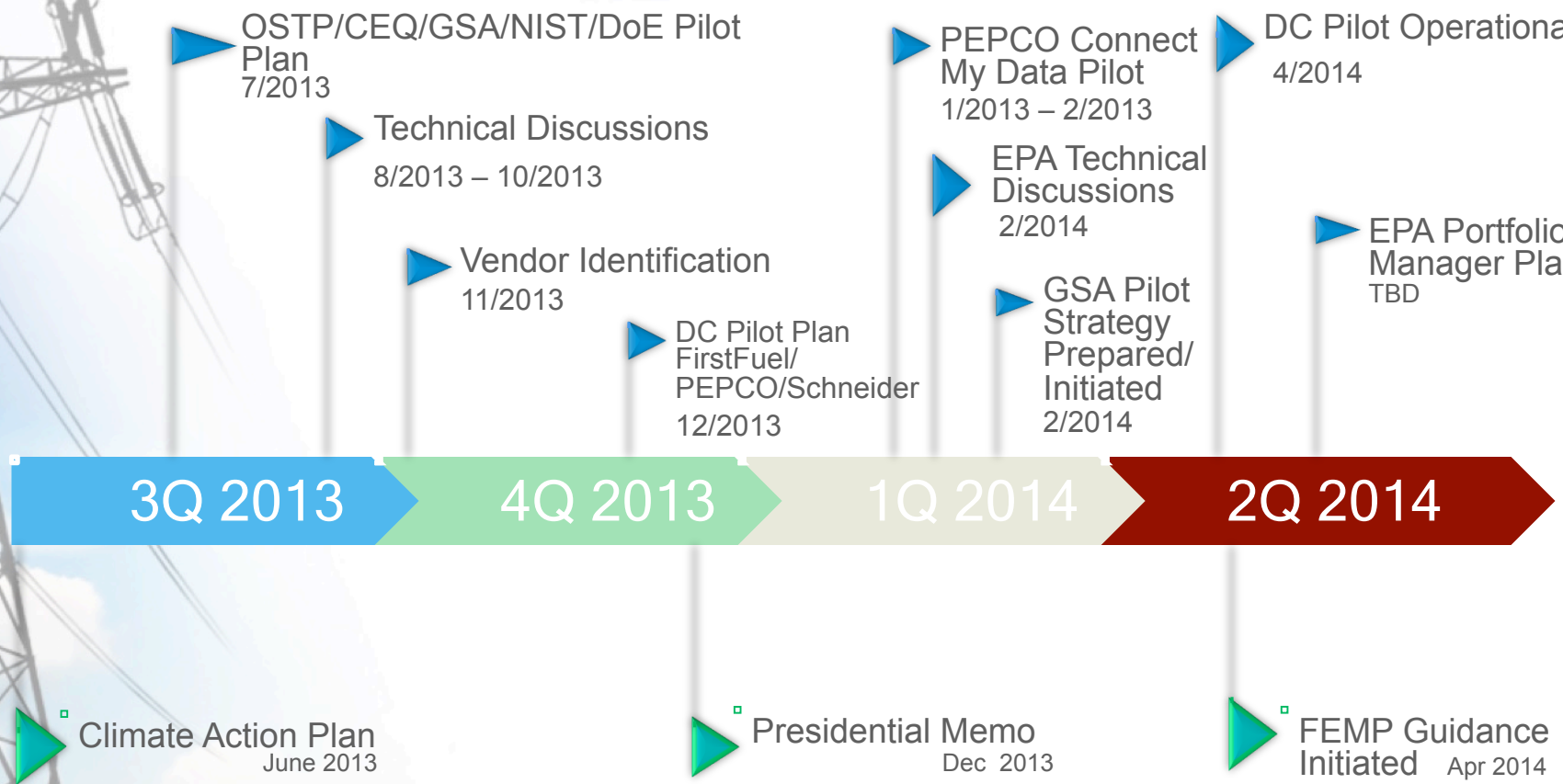
Desired Outcome:

- Significantly increase the volume of publically available building and utility data available to researchers, developers and the public
- Increase effectiveness of energy benchmarking tools by providing a significant increase in data availability

GSA Buildings

- New Executive Office Building
- Orville Wright Building
- National Building Museum
- Department of Education
- Switzer Building

Section 3.B.i - GSA Pilot Activities



Pilot Overview

- Utility Green Button data flowing to First Fuel
- Green Button Certification for Schneider-Electric Energy Profiler Online (EPO) product
- Schneider-Electric EEM product aggregating in facility data
- Automated movement of data from both sources to First Fuel on a daily basis
- Benchmarking by First Fuel
- Pilot Summary and Lesson Learned to be finalized and delivered to FEMP

Analytics for Active Management

Screenshots- National Building Museum

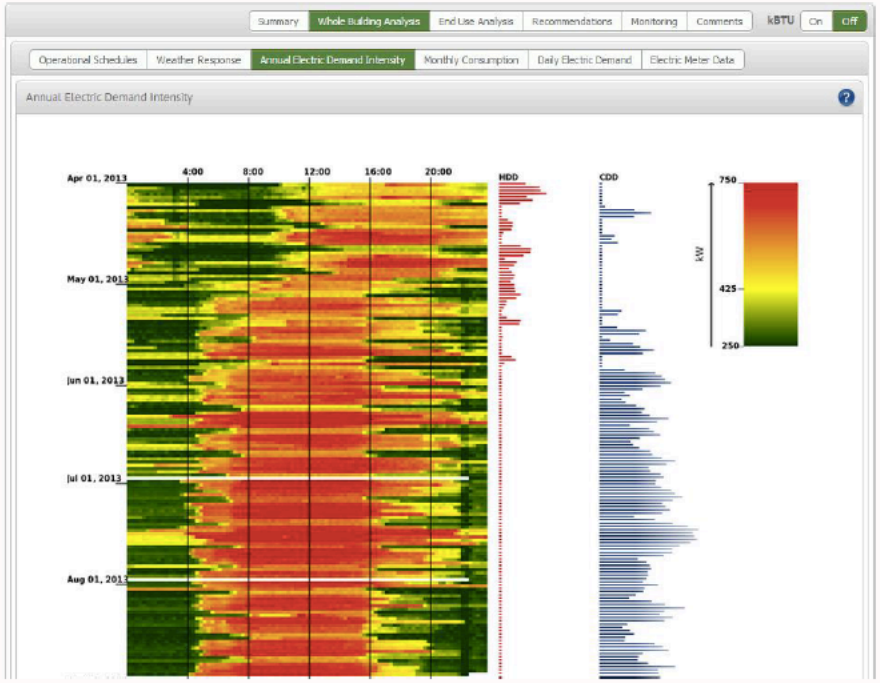


Chart: Annual Demand Intensity

Analytics for Active Management

Screenshots- National Building Museum

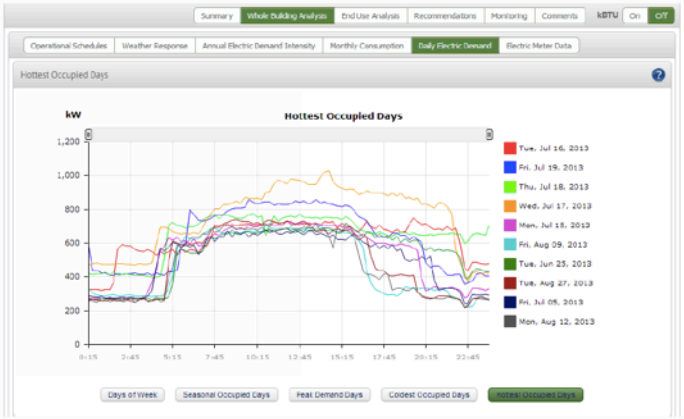
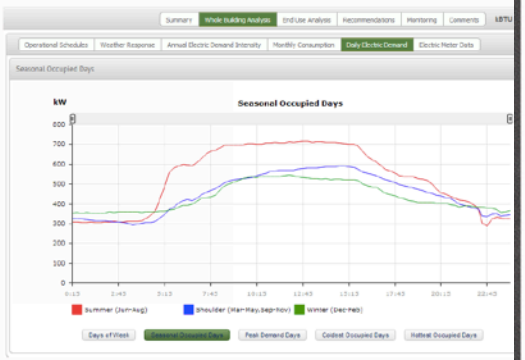


Chart: Hottest Occupied Days

Screenshots- National Building Museum

Screenshots- National Buildin

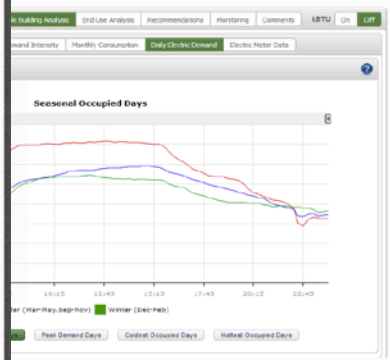


Seasonal Demand Profile

Screenshots- National Building Museum

Chart: Peak Demand Days

Screenshots- National Building Museum



al Demand Profile

Green Button Privacy and Security

- Data Security.
  - Standard Certificate Based HTTPS and SFTP
  - Uses IETF OAuth2 authorization
  - Requires 128 bit (Third Party) and 256 bit (Data Custodian) Transport Layer Security
  - Aligned with NIST best practices

- Personal Identifiable Information (PII)
  - Certified Green Button Metered Data contains no PII
  - All Location information must be exchanged separately from Metered Data
  - Account and Portfolio information must be exchanged separately from Metered Data
  - DOE is leading a Voluntary Code of Conduct Stakeholder Process

Lessons Learned

Significant value achieved through active management

- Virtual energy audit for all properties is possible
- Data drives efficient management

Interoperability is KEY

- Look for Certified Connect My Data implementations
- Leverage purchasing power to bring service providers on-board!

Early in the Green Button Connect My Data life cycle

- Pepco/Schneider first in the nation commercial deployment
- National Rollout now!

More Information

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